

Interoffice

National Radio Astronomy Observatory

Charlottesville, Virginia

April 1, 1982

To: 12-m Working Group

From: B. Peery

Subject: 12-Meter Telescope Meetings:
March 23-25, 1982

12 METER MILLIMETER WAVE TELESCOPE

MEMO No. 146

Present: 3/23 - Lynchburg: J. Findlay, W. Horne, L. King, J. Payne,
P. Rhodes, J. Ralston, and G. Peery.

3/24 - Green Bank: F. Crews, J. Findlay, W. Horne, L. King,
J. Payne, P. Rhodes, J. Ralston and G. Peery.

3/25 - Green Bank: F. Crews, J. Findlay, W. Horne, H. Hvatum,
J. Payne, P. Rhodes, J. Ralston and G. Peery.

Lynchburg - March 23

Status of B.U.S.:

1. Hub and inner ring complete and assembled
2. Apex and feed legs complete
3. Starting to assemble one part of one section of outer ring
4. Work to be finished:
 - a. All of outer ring
 - b. Interface feed legs and apex and backup structure
 - c. Guy rods
 - d. Sand blast and clean
 - e. Paint
 - f. Ship
 - (1) One truck per day
 - (2) Hub, then inner ring, then outer ring and other parts
 - (3) Number of truck loads open until determine best way to load
5. Everyone impressed by the quality of the work, the interest and understanding of the project
6. Reviewed probable problem areas and work to be completed in Green Bank and Tucson

Green Bank - March 24

1. Latest receiver mounting approach (Memo 143) appears to work okay from a deflection problem but appears to have interferences which might require that the platforms around the elevation axis be removed. L. King to review and advise.
2. All four receivers or equivalent loading should be in place when making the final setting.
3. Paul Rhodes to start developing dummy loads.
4. Receiver support to be designed by D. Ross with L. King's assistance - where to fabricate still open - to be installed in Tucson after BUS is installed on elevation axis - and before surface.
5. Sterling mount and horizontal translation equipment to be installed in Tucson during assembly and installation of apex and feed legs.
6. P. Rhodes has designed the horizontal translation equipment. The Green Bank shop will review and decide whether they can do the work or whether to have an outside vendor do the work.
7. Center of dish and vertex to be established by tooling ball on the tooling bar used to locate and carry the template end support during setting and measuring of panels.
8. Alignment of the sterling mount, apex structure and subreflector does not appear to be a problem. It will require a mirror in the center of the subreflector which can be removed if a laser beam is used to align the optics.
9. Items that appear to be problems not yet resolved but appear solvable when manpower and time becomes available:
 - (a) Man support in center of hub both at Green Bank and Tucson
 - (b) Mounting of mirror selector, calibration source, corner cube, mirrors, etc. in the center of the hub
10. There are potential problems that are recognized but their size and their correction cannot be resolved until the new system is in operation. They are solvable with time and manpower. Such as:
 - (a) Reflections and radiation from structure introduced into the optic system
 - (b) Standing waves
 - (c) Mirror alignment stability
 - (d) Mirror quality
 - (e) See Memo #144
 - (f) Is focus a function of temperature?

11. Cutouts in four surface panels to fit around feed legs are to be done in Green Bank shop. W. Horne or L. King will advise. An additional support will be installed at these cutouts.
12. Mounting supports will be installed and holes drilled for panel supports in Green Bank. W. Horne will advise on procedures.
13. Measurement system coming along - has some areas where work will be done to improve it which will require some thought and time.
 - (a) Apple program looks good
 - (b) Setting of angle of transducers a problem
 - (c) Determining exact lengths a problem
 - (d) Obtaining an exact standard length for comparison. Will contact measurements lab.
14. Tucson Plans for Erection - receiving and storing, etc. Paul Rhodes to coordinate.
 - (a) Crane and assembly areas have been resolved
 - (b) Storage a big problem
 - (c) Template and reference jig to be stored in dome and protected during erection
 - (d) Operators will help in panel adjustment
 - (e) Paul Rhodes and one person will probably come to Green Bank to observe the procedure
 - (f) P. Rhodes will study ways of handling template when measuring in Tucson
 - (g) Erection complete including panels in place before measurement and panel setting is started

Green Bank - March 25

Reviewed the measurement procedure and equipment and the notes summarized above and revised, added and concluded the following:

1. Template would be modified by:
 - (a) Changing end support to sliding socket
 - (b) Installing LTV on sliding socket to determine change in length
 - (c) Add Talyvel and spirit level to determine slope and perpendicular position
 - (d) Improve setting of angle of transducers
 - (e) Leave open any changes of the transducer support system

2. Have all pieces on site and assembly going along before removing existing dish
3. Probably install only one quadrant of panels in Green Bank if all goes well
4. The dish will be rotated in Tucson to simplify measuring and setting
5. P. Rhodes will determine how to swing template in and out of feed legs when measuring in Tucson
6. P. Rhodes will develop a work flow procedure for Tucson
7. H. Hvatum will add the flow procedure and Memo #144 to the PERT chart
8. Storage is a major problem at the site. This is being reviewed
9. Position switching will be affected by the larger dish. How to compensate will have to be determined later
10. Observing down to 8 degrees has been discussed - problems no resolutions
11. H. Hvatum will work on existing dish disposal procedure
12. Spring must be used to take part of load of end of template at outer rim
13. Building modifications at site out for pricing
14. Budget to be revised when major cost items are complete
15. VLA crew available for approx. 3 weeks starting end of July
16. Shipping from Green Bank to be coordinated with Tucson schedule and plan for storage
17. Marshaling area for receiving and shipping in Green Bank will be the paved parking area across from the warehouse
18. Final setting of panels for minimum error or max. efficiency at 60° elevation. L. King to calculate setting data